



## Filing Receipt

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**PROJECT NO. 51840**

**RULEMAKING TO ESTABLISH  
ELECTRIC WEATHERIZATION  
STANDARDS**

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**PUBLIC UTILITY COMMISSION  
  
OF TEXAS**

**COMMENTS FROM ENEL NORTH AMERICA, INC.**

**ENEL OVERVIEW**

Enel North America (Enel) appreciates the opportunity to provide feedback on weatherization standards. Enel is a multinational power company and a leading integrated player in the global power, gas and renewables markets. It is the largest European utility by market capitalization and ordinary EBITDA, and is present in over 30 countries worldwide, producing energy with over 88 GW of managed capacity. Enel distributes electricity through a network of over 1.3 million miles, and with over 73 million business and household end users globally, the Group has the largest customer base among its European peers.

Enel's renewables arm, Enel Green Power, is the world's largest renewable private player, managing around 46 GW of wind, solar, geothermal and hydropower plants in Europe, the Americas, Africa, Asia and Oceania. Enel operates in the US and Canada through two companies: Enel Green Power North America and Enel X North America. Enel Green Power North America is a leading owner and operator of renewable energy plants with a presence in 18 US states and one Canadian province. The company operates around 70 plants with a managed capacity of over 6 GW powered by wind, hydropower, geothermal and solar energy.

Enel X in North America has around 4,500 business customers, spanning more than 35,000 sites, representing approximately \$10.5B in energy spend under management, approximately 4.7 GW of demand response capacity and over 70 battery storage projects that are operational and under contract. Enel X is revolutionizing the EV charging market with its smart charging solutions deploying around 60,000 charging stations in the US.

## **EXECUTIVE SUMMARY OF COMMENTS**

- Weatherization requirements will enhance transparency and reliability, but should not require resources to operate outside of ranges that are technically feasible, and defined in operating plans.

## **COMMENTS**

Enel supports implementation of the 2012 Quanta Technology Report recommendations and believes that this will enhance transparency and reliability.

The 2012 Quanta report is clear that resources must operate within the limitations of their operating plans. Enel requests that the Commission take this into account when drafting and enforcing these rules, and not implement requirements that are technically infeasible, as defined by resource operating plans.

### **§25.55. Weather Emergency Preparedness.**

#### **(b) Definitions**

##### **(1) Cold weather critical component**

Components operate within defined operating ranges, including temperature ratings. These operating ranges ensure employee safety, operational integrity, long-term plant reliability, and original equipment manufacturer warranties. Enel requests that this definition be revised to clarify that cold weather critical components are required to function in defined operating ranges.

##### **(c) Phase one weather emergency preparedness reliability standards for a generation entity.**

Enel supports the Quanta Technology Report recommendations. Many of these requirements can be applied broadly across technologies, such proper documentation; identification of operating limitations and critical failure points; and training and drills.

However, some requirements cannot be applied broadly across resources. Enel recommends that the Commission develop technology specific requirements. Items (c) (1) (A) and (B) seem to apply specifically to thermal resources, and Enel requests clarity on this.

Enel offers these resource specific requirement recommendations. In comments submitted on July 1, 2021, Enel submitted comments that provide additional details on operating ranges and limitations. As a baseline, no resource should be required to operate outside of limitations. For some operating conditions, resources cannot be retrofitted and manufacturers do not currently offer any solutions, making it impossible for resources to operate in those conditions. For example, icing is outside of limitations for wind resources. Consistently available and effective technologies to ensure operations during icing do not exist.

### **Wind Technology**

#### ***Temperature:***

For the Texas climate, the operational envelope should be from -10C to +40 Celsius for standard temperature turbine versions, and from -20C to +40C for cold temperature versions, if this low temperature occurs on site frequently. Enel does not recommend requiring lower operational temperatures, as these typically limit the hot temperature to +30C or +35C and thus would severely restrict wind turbine production during summer and during high loads for air conditioning needs.

#### ***Blade Icing:***

Currently, de-icing technologies are not offered for most turbine models and blades by manufacturers. Similarly, retrofits for existing wind turbines are not available. Enel encourages the Commission to continue to monitor de-icing technologies, and re-visit requirements when consistently available and effective technologies enter the market.

#### ***Wind Speed***

Wind turbine cut in speed ranges from 6-9 miles per hour and cut out speed is about 55 miles per hour. At wind speeds higher than that, turbines cannot operate safely. No wind turbine manufacturer offers models that can operate in wind speeds higher than 55 mph, although turbines can withstand gusts up to 80

miles per hour in standstill with blades feathered. These industry standards should be taken into account in any requirement on wind's performance.

## **Solar Generation**

### ***Temperature***

Solar PV modules have operating ranges from -40C to +85C, however their performance decreases with increasing temperature, which results in lower electric output. Maximum efficiency range is typically between +15C and +35C. Currently, three module standards are extensively used: IEC 61730-2, IEC 61215-1 (international) and ANSI/UL 1703 (United States).

The temperature range for solar inverters (equipment that transforms DC into AC electricity) is less standardized than some other types of generation and may vary by typology, manufacturer, and site location. Before the inverter reaches the max operating temperature, it would typically gradually reduce its power output (de-rating). Most inverters will derate at around 45C – 50C.

### ***Icing***

Solar panels are either installed on fixed structures or movable trackers. All systems are tilted though to have the optimal angle to the sun. The tilting promotes ice and snow melt and is therefore self-cleaning. Additionally, bifacial solar modules offer unique reliability benefits during winter operations. Snow increases the reflective ability of the ground, which improves performance. Bifacial panels also accelerate snow shed due to higher panel temperatures. Frameless solar modules also shed snow faster since there is no impedance from the frame.

The Commission may explore incentivizing bifacial and tracking solar panels in the market, in order to enhance winter reliability.

### ***Wind***

All solar plants must be designed to comply with ASCE 7 wind loads, which are defined by a 3 second wind gust, at 33ft above ground with a 300 year return period. This wind speed varies with location, and ranges from 95 to 107 mph for the Texas region.

### ***Hail***

Standard solar modules can withstand hail to a size of 1.3 inch without damage (IEC 61730-2). This standard should guide any requirements.

### **Battery Energy Storage**

#### ***Temperature***

The operating temperature range for these cooling systems is typically from -20°C to +50°C

#### ***Wind and Ice***

It is standard for batteries that are being developed today to be stored in containers that provide protection from heat, cold, wind and moisture. Providing this protection is important regardless of the specific manner in which a storage resource is constructed.

### **Substations**

#### ***Temperatures***

IEEE standards for substations equipment define normal service conditions as ambient temperatures ranging from -30 to +40 degrees Celsius. The Commission may consider using this industry standard to guide any requirement.

#### **(c) (1) (C)**

Enel requests that the Commission clarify that failures that occurred between November 30, 2020 and March, 1, 2021 did not include instances where plants followed operating plans and ranges. There may have been times that plants were derated and went offline in this timeframe that were not failures, but were plants following operational requirements.

#### **(d) Inspections for a generation entity.**

(1) Enel requests clarification the “Risk level” ERCOT will use to determine which resources need inspected.

#### **(e) Weather-related failures by a generation entity to provide service.**

Enel requests that resources on outages that are necessary according to their operating plans are not classified as “weather-related failures.”

## **CONCLUSION**

Enel appreciates this opportunity to provide comments and looks forward to working with the Commission and other interested parties.

Respectfully submitted,

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